AMENDMENTS TO THE CLAIMS

Claims 1-4 (Canceled)

5. (Currently Amended) ~~The method of claim 4~~ In a system for presenting an audio stimulus having an input, an amplifier, an attenuator and a transducer, a method of predicting a sound pressure level emitted by the transducer comprising:

applying a broadband audio signal to the input;

inserting a first attenuation between the amplifier and the transducer;

measuring a first output from the transducer;

calculating a first transfer function for a signal path from the input to the measured first output;

inserting a second attenuation between the amplifier and the transducer;

measuring a second output from the transducer, wherein the broadband audio signal applied at the input is measured simultaneously with measuring the first and second outputs from the transducer;

calculating a second transfer function for a signal path from the input to the measured second output, wherein the first and second transfer functions are calculated as respective ratios of the first and second measured outputs to the corresponding measured inputs and wherein each of the first and second transfer functions is expressed as a product of an amplifier transfer function, an attenuator transfer function, an electrical-to-acoustical transfer function and an acoustical-to-electrical transfer function;

combining the first and second transfer functions to solve for a characteristic impedance and sensitivity of the transducer;

calculating a sound pressure level emitted by the transducer as a function of input signal and attenuation.

wherein the characteristic impedance $Z_L(f)$ of the transducer is calculated as:

$$Z_L(f) = \frac{H_{BD}(f,R_1,A,Z_L)\times R_1 - H_{BD}(f,R_2,A,Z_L)\times R_2}{H_{BD}(f,R_2,A,Z_L) - H_{BD}(f,R_1,A,Z_L)}$$

where: $H_{BD}(f,R_A,A,Z_L) = H_{AMP}(f)\times H_{ATTN}(f,R_A,Z_L)\times H_{E2A}(f,A,Z_L)\times H_{A2E}(f)$

$H_{AMP}(f)$ is the electrical transfer function of the amplifier

$H_{ATTN}(f,R_A,Z_L)$ is the electrical transfer function of an attenuator

R_A = output attenuator resistor value

R_1 = resistor value of first attenuation

R_2 = resistor value of second attenuation

$H_{E2A}(f,A,Z_L)$ is the electrical to acoustic transfer function of the transducer

$H_{A2E}(f)$ is the acoustic to electrical transfer function of a reference measuring microphone and preamp

$$A(f) = p_0 \times 10^{\frac{L_{SEN}(f)}{20}}$$

p_0=20 μPascal

$L_{sen}(f)$=transducer sensitivity,

6. (Original) The method of claim 5 wherein the sensitivity of the transducer is calculated as:

$$A(f)=\left|\frac{H_{BD}(f,R_1,A,Z_L)\times[Z_L(f)+R_1]}{H_{AMP}(f)H_{A2E}(f)\sqrt{Z_L(f)}}\right|.$$

7. (Currently Amended) The method of claim 6 wherein the sound pressure level is calculated as:

$$20\log_{10}\left(\sqrt{\frac{\sum_f\left|Y_X(f)\bullet H_{D2E}(f)\bullet H_{BD}(f,R_1,A,Z_L)\bullet\frac{H_{ATTN}(f,R_A,Z_L)}{H_{ATTN}(f,R_1,Z_L)}\right|^2}{M}}\times\frac{1}{H_{A2E}(f)\bullet p_0}\right).$$

where: $H_{D2E}(f)$ is the frequency response of a D/A converter.

8. (Currently Amended) The method of claim 6 wherein the sound pressure level is calculated as:

$$10\log_{10}\left(\frac{\sum_f\left|Y_X(f)\bullet H_{D2E}(f)\bullet H_{BD}(f,R_1,A,Z_L)\bullet\frac{H_{ATTN}(f,R_A,Z_L)}{H_{ATTN}(f,R_1,Z_L)}\right|^2}{\sum_f\left|Y_{XREF}(f)\bullet H_{D2E}(f)\bullet H_{BD}(f,R_1,A,Z_L)\right|^2}\right)+N.$$

where: $Y_X(f)$ = digital spectrum of signal presented to A/D converter during normal operation

$Y_{XREF}(f)$ = digital spectrum of signal presented to A/D converter during calibration;

N = measured sound pressure level in dB SPL.

9. (Currently Amended) The method of claim 6 wherein the sound pressure level is calculated as:

$$20\log_{10}\left(\sqrt{\frac{\sum_f \left|Y_X(f)\bullet H_{D2E}(f)\bullet H_{BD}(f,R_1,A,Z_L)\bullet \frac{H_{ATTN}(f,R_A,Z_L)}{H_{ATTN}(f,R_1,Z_L)}\bullet H_{A-W}(f)\right|^2}{M}}\times\frac{1}{H_{A2E}(f)\bullet p_0}\right).$$

where: $H_{A\text{-}W}(f)$ is the electrical transfer function of A – weighting function

M = number of frequency points in spectra.

10. (Original) The method of claim 6 wherein the sound pressure level is calculated as:

$$10\log_{10}\left(\frac{\sum_f \left|Y_X(f)\bullet H_{D2E}(f)\bullet H_{BD}(f,R_1,A,Z_L)\bullet \frac{H_{ATTN}(f,R_A,Z_L)}{H_{ATTN}(f,R_1,Z_L)}\bullet H_{A-W}(f)\right|^2}{\sum_f \left|Y_{XREF}(f)\bullet H_{D2E}(f)\bullet H_{BD}(f,R_1,A,Z_L)\right|^2}\right)+N.$$

11. (Currently Amended) The method of claim ~~1~~ 5 wherein the transducer is an acoustic transducer.

12. (Currently Amended) The method of claim ~~1~~ 5 wherein the transducer is a vibratory transducer.

Claims 13-16 (Canceled).